NEWSLINE

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Mariella seeks better biodetector

By Charles Osolin
NEWSLINE STAFF WRITER

It didn't take hijacked airliners crashing into buildings and anthrax-tainted mail to convince Laboratory engineer Ray Mariella Jr. that the United States was vulnerable to bioterrorist attacks.

Motivated by Iraq's invasion of Kuwait and its use of chemical and biological weapons in its earlier war against Iran, Mariella has been working since the early 1990s on a variety of early warning systems aimed at sniffing out harmful biological agents.

And thanks to the foresight of Mariella and many colleagues at LLNL and other national labs, sophisticated detection systems are now being deployed that can alert authorities in time to provide suitable treatment for people

See **BIODETECTION,** *page 4*

JACQUELINE MCBRIDE/NEWSLINE

Ray Mariella Jr. (left) and John Dzenitis of the Laboratory's Engineering Directorate with the Autonomous Pathogen Detection System, which continuously monitors for airborne pathogens and toxins.

Lab technology contributes to new portable fuel cell announced by local company

By Charles Osolin
NEWSLINE STAFF WRITER

UltraCell Corp. of Livermore this week announced the development of a portable fuel cell that it says could power a laptop computer for an entire day without recharging. The company's reformed methanol fuel cell is based in part on microreformer and micro fuel cell technology developed at the Laboratory and licensed to UltraCell in 2002.

According to UltraCell, its new fuel cell has twice the energy density of standard lithium batteries and can provide continuous power at remote locations by "hot swapping" its methanol fuel canisters for fresh fuel. "This means a nonstop supply of power anywhere, anytime," the company said in an announcement.

Jim Kaschmitter, UltraCell's CEO, credited "key advances" by the company and LLNL and its other partners for the "breakthrough in fuel reformer technology.

"UltraCell's novel fuel reformer converts methanol fuel to hydrogen efficiently and in a very compact package," Kaschmitter said. "Our technical team solved several key engineering challenges in thermal design and packaging to achieve this breakthrough."

The company's first fuel cell, the XX90, was developed as a prototype for military applications. About the size of a paperback novel, the 40-ounce unit produces up to 45 watts of continuous power, according to the UltraCell announcement.

See **FUEL CELL,** *page 4*

U.S. call for participation in international magnetic fusion energy project

The U.S. office overseeing contributions to the International Tokamak Experimental Reactor, or ITER, is seeking expressions of interest from U.S. organizations that would like to participate in the international fusion energy project.

The United States' ITER Project Office (USIPO) is operated jointly by Princeton Plasma Physics Laboratory (PPPL) and Oak Ridge National Laboratory (ORNL) on behalf of the United States Department of Energy.

The USIPO is responsible for overseeing the United States contributions to ITER, which will be finalized by multi-lateral negotiations among the ITER partners.

The US ITER Project is currently working on the provisional in-kind contributions to ITER negotiated by the US. This provisional scope and some tasks may change or be assigned to other ITER parties during future negotiations. The US ITER Project needs to proceed with plans to establish the USIPO and work on critical tasks while the negotiations take place and before the ITER Organization is established.

Organizations interested in providing:

• Individuals for specifically identified positions in the USIPO and/or technical staff supporting team leaders of specific technical area work.

• Research and development and design for in-

See **ITER,** *page 4*

October detour

JACQUELINE MCBRIDE/NEWSLINE

Construction work continues on the Greenville Road railway overpass. The reopening of Greenville Road has been pushed back to Oct. 24 by the City of Livermore. Greenville was originally scheduled to reopen this week. This new date appears on the detour signs along Greenville Road, and has been confirmed with the city's Engineering Department.

LAB COMMUNITY NEWS

Weekly Calendar

Technical Meeting Calendar, page 3

Monday 29

The **Cancer Awareness Film Festival** starts today and runs through Friday. Tune to Lab TV channel 2 at 10 a.m., noon, 2, 4, 8 p.m. and 4 a.m. to view programs from past cancer awareness campaigns and videos from the American Cancer Society. (Check Lab TV listing below for schedule.)

Wednesday 31

Celebrate diversity at **"Around the World @ Noon,"** a cultural and community event presented by the LLNL Employee Networking Groups and the Work-Life Center today from 11:30 a.m. to 1 p.m. at the NIF lawn area. Lab employees are encouraged to attend and try different foods, listen to multicultural performers and learn from docents representing several Bay Area museums and cultural centers about their current and upcoming exhibits. Food will be available on a first come, first served basis. Employees are encouraged to dress in traditional ethnic garments. For more information, see the flier at http://www-r.llnl.gov/ADA/news/ detail/aroundtheworld-flyer.pdf.

Up & Coming

Lab employees are invited to the 6th annual **SEGRF poster session.** The 6th annual SEGRF (Student Employee Graduate Research Fellowship) Program's Poster Symposium will be held Thursday, Sept. 15, from 3 to 5 p.m. in the West Cafeteria. The University Relations Program invites Laboratory scientists, researchers, postdocs and student employees to attend the poster presentation by participants in the SEGRF Program. For more information, call Joanna Allen of the University Relations Program, 3-9225.

LLTN LAB TV broadcasts

Cancer Awareness Campaign 2005

MON. **29** "Relay for Life." The American Cancer Society shows a series of video clips highlighting fundraising relays.

TUES. **30** "Stamp Out Cancer." Dr. Bodai shares statistical information about breast cancer and his journey toward developing the first fundraising stamp for breast cancer research.

WED. **31** "Survivor Stories."

THURS. **1** "Wishful Thinking is Not Enough." A presentation by well-known author and breast cancer physician Dr. Susan Love.

FRI. **2** "Top Ten Cancer Myths"

These programs will appear on Lab TV Channel 2, at 10 a.m., noon, 2, 4 and 8 p.m. and 4 a.m.

IN MEMORIAM

W. Kenneth Davis

W. Kenneth Davis, an energy official in both the Eisenhower and Reagan administrations and a lifelong advocate for the peaceful uses of nuclear energy, died July 29. He was 87.

Born in Seattle, he grew up in Berkeley, where he attended the University of California before earning his bachelor's and master's degrees in chemical engineering from the Massachusetts Institute of Technology in 1940 and 1942, respectively. He worked at Standard Oil of California, now known as Chevron and taught engineering at UCLA.

In the early 1950s, Davis was manager of development and engineering for a Standard Oil subsidiary that was building a pilot model of the Materials Testing Accelerator at what was to become LLNL. The accelerator, which was never completed, was designed to produce large amounts of plutonium and tritium for nuclear weapons.

In 1954, he joined the Eisenhower administration as deputy director of the U.S. Atomic Energy Commission. A year later, he took over as head of the reactor development division, which was crucial to the birth of the civilian nuclear power industry.

Davis left the Atomic Energy Commission in 1958 and joined San Francisco's Bechtel Corp. He returned to Washington, D.C., in 1981 as deputy secretary of energy in the Reagan administration.

Davis is survived by his second wife, Ann Nilsson Davis of San Rafael; a brother, Keith Davis of Grand Lake, Colo.; two daughters, Gail Greene of Novato and Kerry Davis of Kentfield; a son, Warren Davis of Lafayette; and five grandchildren.

Contributions can be made to the Margaret and Kenneth Davis Memorial Scholarship Fund at the Marin Music Chest, P.O. Box 468, Ross, CA 94957; Stem Cell Research Foundation, 22512 Gateway Center Drive, Clarksburg, MD 20871; or the Marin Agricultural Land Trust, P.O. Box 809, Point Reyes Station, 94956.

Lavern Frank 'Vern' Greer

Lavern Frank "Vern" Greer, 68, of Bethel Island, Calif., died in Springfield, Mo., after a brief illness.

Born in Iowa, Vern lived in California for more than 40 years. He was retired from the Laboratory where he was a heavy equipment yard supervisor for 17 years. Prior to that he worked for 20 years at the General Motors assembly plant in Fremont.

Vern was an Army veteran, having served during the Korean War. He enjoyed raising livestock as a hobby. Vern will be remembered most for his dedication to family and friends.

He is survived by his wife of 45 years, Judy; his mother, Ellen Greer of Missouri; his daughter, Julie Sutton of Bethel Island; son, Robert Greer of Pacheco; son-in-law, Jack Sutton of Bethel Island; daughter-in-law, Karen Banano of Pacheco; grandchildren, Jack Sutton, Joshua Sutton and Stephanie Sutton, all of Bethel Island; and granddaughter, Isabella Greer of Pacheco.

Services were held on Bethel Island.

James F. Tracy

James Frueh Tracy, a 30-year Lab employee, died in Pleasanton on Aug. 16. He was 89.

Tracy was born in San Pedro, Isle of Pines, West Indes, on July 29, 1916. He graduated in 1940 from the University of Illinois with a bachelor's degree in electrical engineering and was employed by the General Electric Co. in Schenectady, NY, working on microwaves and radar jamming.

Tracy received a master's degree in electrical engineering and a doctorate degree in nuclear physics from UC Berkeley. He worked as a civilian Operations Analyst for the U.S. Army in Tokyo, Japan and Seoul, Korea at the end of the Korean War. He was employed as a physicist at LLNL from 1953 until his retirement in 1983.

Tracy was active in a number of organizations, including the First Church of Christ Scientist, Livermore and the Livermore/Yotsukaido Sister City Organization. He enjoyed skiing, camping, hiking, traveling and photography.

Tracy is survived by his wife, Margaret Lelean Jory; two sons, Stephen of Castro Valley and Douglas of Shingle Springs; daughter-in-law, Lisa Tracy; and his three grandchildren, James, Heather and Kayla, all of Shingle Springs. He was preceded in death by his twin brother, William; and his sister, Marian Tracy Messman.

The family will hold private services. Contributions in Tracy's memory may be made to the First Church of Christ Scientist, Livermore; the Sierra Club; or a charity of choice.

Patrick Allan Yarnell

Patrick Allan Yarnell, a seven-year resident of Livermore, died Aug. 14. He was 60.

Born Oct. 22, 1944, in El Centro, Calif., Yarnell was a Navy veteran who served in Vietnam. He previously lived in Fremont. He was a retired heating and air conditioning mechanic for the Laboratory and Pacific Coast Trane in Sunnyvale.

He enjoyed being with his family, playing with his grandchildren and watching the Sci-Fi channel.

He is survived by his wife of 33 years, Shirley Yarnell: daughter Melissa Yarnell of Livermore; son Kevin Yarnell of Livermore; brothers Gordon Yarnell of El Centro, Pete Yarnell of Pinetop, Ariz. and Paul Yarnell of El Cajon; mother Joyce Yarnell of Pinetop, Ariz.; and two grandchildren.

Services were held.

No classified ads this week; advertisements will appear on the *Newsline* Website

Due to space restrictions in this week's *Newsline*, in addition to technical difficulties with the classified ads Website, the classified ads are available only on the Web, located at https://www-ais.llnl.gov/newsline/ads/ or http://www. llnl.gov/pao/employee/. Ads must be submitted by close of business Tuesdays in order to appear that week in *Newsline* or on the Web.

Newsline

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Contacts:

Media & Communications manager: Lynda Seaver, 3-3103

Newsline editor: Don Johnston, 3-4902

Contributing writers: Bob Hirschfeld, 2-2379; Linda Lucchetti, 2-5815; Charles Osolin, 2-8367; David Schwoegler, 2-6900; Anne M. Stark, 2-9799; Stephen Wampler, 3-3107. For an extended list of Lab beats and contacts, see http://www.llnl.gov/pao/contact/

Photographer: Jacqueline McBride

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Telephone: (925) 422-4599; Fax: (925) 422-9291

e-mail: newsline@llnl.gov or newsonline@llnl.gov

Web site: http://www.llnl.gov/pao/

AROUND THE LAB

Grassroots collaboration offers unique fare on safety

A unique aspect of this year's safety fair is that it is being planned and coordinated by the LLNL Grassroots Safety Collaboration. Because the collaboration is comprised of teams from across the Lab, members believe it brings to the event a broad view of environmental, safety, and health issues and interests.

The fair, to be held Sept. 15, is the first Lab-wide project for the collaboration begun last year.

"We are all after the same thing — reducing illness and injuries in our individual areas," said Bob Felicitas, safety officer for the Environmental Protection Department and chair of the Collaboration. "But we also want to build a strong safety culture across the Lab at the grassroots level. That's what brought us together and what we are trying to reflect in this year's fair."

"I believe the collaboration can make a difference in the LLNL safety culture," agreed Patty Billy, safety officer in the Security Department and a member of the collaboration. "Our interaction with other committees has proven invaluable. It has helped to improve our safety culture and that of the other departments represented. It would be nice to see other departments involved in the effort."

According to Billy, her grassroots team has six people who volunteer their time as division or group safety officers, and work with her to implement an Injury and Illness Prevention Program. "Because of their efforts, and those of our managers, the Security Department has seen a significant decline in injury and illness over the past two years," Billy said.

Melanie Alexandre, ergonomics subject matter expert and chair of the Grassroots Ergonomics Committee, said that being part of the collaboration helps ensure that her committee's initiatives will support the needs of various groups around the Lab. It also helps prevent a duplication of effort, she added.

"Being part of the grassroots collaboration is an excellent way to share information and experiences with a goal of making the Lab a safer place to work," said Jim Emig, chair of the New Technologies Engineering Division team. "The people on my team, and the teams in the collaboration, are not here to be enforcers, but to offer a resource where employees can go to ask a safety question or raise a safety concern, and get a respectful response."

Chairs of committees forming the LLNL Grassroots Safety Collaboration include the following: Alexandre, Ergonomics (2-8237); John Bower, Laser Science Engineering Division (2-1589); Billy, Security Dept. (3-2045); Emig, Engineering (3-4066); Felicitas, EPD (2-2759); Dave Hill, Hazards Control (4-6139); Sam Ilyin, UTel (4-5392); Aaron Martin, Engineering (2-5756); Aaron Wanden, Plant Engineering (3-0495).

To help employees and managers learn more about the grassroots effort, there will be a "collaboration corner" at the fair. Team chairs will be available to discuss grassroots efforts, show their activities, and the results of their work.

Over 60 exhibits and demonstrations will be featured at the 2005 LLNL Safety Fair, to be held Thursday, Sept. 15, from 11 a.m. to 1:30 p.m. outside Bldg. 663. The exhibits will be balanced to reflect the theme, "Your Environment, Your Safety, Your Health."

Summer Student Calendar

Seminars, panels and other activities are winding down for summer student employees. Go to the Student Bulletin Board at http://education.llnl.gov/sbb/for details and to register for events.

Tuesday 30

ICST seminar: "Multigrid Methods," by Van Henson, CASC. 2:30 p.m., Bldg. 219, room 163. Contact: Tiffany Ashworth, 4-3491.

Wednesday 31

ICST seminar: "Supercomputing at LLNL," by Kim Cupps, Integrated Computing & Communications High Performance Systems. 2:30 p.m., Bldg. 219, room 163. Contact: Tiffany Ashworth, 4-3491.

Technical Meeting Calendar

Monday 29

BIOSECURITY & NANOSCIENCES LABORATORY/PHYSICAL BIOSCIENCES INSTITUTE
"Chemical and Physical Sensing With Modulated Optical Nanoprobes (MOONs)," by Jeffery Anker, postdoctoral applicant, University of Michigan. 2 p.m., Bldg. 151, room 1209, Stevenson Room. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Chris Orme, 3-9509, or Beverly Zumwalt, 2-7535.

CENTER FOR APPLIED SCIENTIFIC COMPUTING (CASC)/INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH (ISCR)
"Learning and Inference for Natural Language Processing and Intelligent Access to Information," by Dan Roth, Dept. of Computer Science, University of Illinois at Urbana-Champaign. 10 a.m., Bldg. 451, room 1025, White Room. For more information go to http://www.llnl. gov/casc/calendar.shtml. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Tina Eliassi-Rad (CASC), 2-1552, or Erica Dannenberg, 3-2167.

Tuesday 30

CENTER FOR APPLICATIONS DEVELOPMENT & SOFTWARE ENGINEERING (CADSE)/INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH (ISCR)
"Testing PL/SQL with Ounit," by Arnold Weinstein, Computation Directorate. 10 a.m., Bldg. 451, room 1025, White Room. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Trish Damkroger (CADSE), 2-5816, or Erica Dannenberg, 3-2167.

NANOSCALE SYNTHESIS & CHARACTERIZATION SEMINAR SERIES
Seminar 1: "Polymer Templated Nanopatterns," by Douglas H. Adamson, Princeton University. 10:30 a.m., Bldg. 155 Auditorium. Refreshments served at 10:15 a.m. Common use facility. Foreign nationals may attend. Contact: Jeffrey Kass, 2-4831, Alex Hamza, 3-9198, or Dawn Brosnan, 4-5008.

Seminar 2: "New Self Assembly Techniques for Manufacturing Complex Devices," by Paul Nealy. University of Wisconsin, 11 a.m., Bldg.155 auditorium. 11 a.m., Bldg. 155 auditorium. Refreshments served at 10:15 a.m. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Jeffrey Kass, 2-4831, Alex Hamza, 3-9198, or Dawn Brosnan, 4-5008.

I DIVISION, M DIVISION & THE CENTER FOR BIOTECHNOLOGY, BIOPHYSICAL SCIENCES AND BIOENGINEERING
"What We Know and Don't Know About Biological Vision," by Bruno Olshausen, Department of Neurobiology, Physiology and Behavior & the Center for Neuroscience, UC Davis, 2 p.m., Bldg. 361, room 1140, auditorium. Common use facility. Foreign nationals may attend. Contact: Steve Lane, 2-5335, or Rose Gardner, 2-2317.

Wednesday 31

CMS/CHEMICAL BIOLOGY & NUCLEAR SCIENCE DIVISION
"Noble Gas Isotopic Signatures as Tracers to Solar System Processes," by K. J. Mathew, UC San Diego. 10 a.m., Bldg. 151, room 1209. Applicant seminar. Property protection area. Foreign national temporary building access procedures apply. Contact: Brad Esser, 2-5247, or Rosa Yamamoto, 2-0454.

Thursday 1

ENGINEERING LECTURE SERIES
"Optimized Compiler Generated Code Accelerators for FPGA's," by Walid Najjar, University of California, Riverside. 1:30 p.m., Bldg. 155 auditorium. Contact: Joe Galkowski, 2-0602, or Kristin Mercer, 3-3443.

CENTER FOR APPLIED SCIENTIFIC COMPUTING/CENTER FOR APPLICATIONS DEVELOPMENT & SOFTWARE ENGINEERING
"Why Software Quality Assurance Practices Become Evil," by Gregory Pope, Center for Applications Development & Software Engineering. 10 a.m., Bldg. 453, room 1001, Armadillo Auditorium. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Erica Dannenberg, 3-2167.

PHYSICAL BIOSCIENCES INSTITUTE/POSTDOC APPLICANT SEMINAR
"An Analysis of the in vivo Mechanism of the Bacterial Condensin MukBEF," by Ryan B. Case, UC Berkeley. 2 p.m., Bldg. 151, room 1209, Stevenson. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Chris Orme, 3-9509, or Beverly Zumwalt, 2-7535.

The deadline for the next Technical Meeting Calendar is noon Wednesday.

'Visualizing the difference' at supercomputing conference

Preparations are underway for Advance Simulation and Computing Program participation in SC|05, the annual international supercomputing conference, Nov. 12-18 in Seattle.

The Tri-Lab Advanced Simulation and Computing (ASC) Program uses the annual conference series to showcase many of its significant contributions to high-end technical computing. Presentations and demonstrations will exploit the innovative technologies that have been designed, developed, and implemented within ASC.

The ASC Research Exhibit project team has issued a Call for Participation inviting scientists to consider participating in the conference. Scientists are encouraged to submit work for consideration and possible inclusion in this year's exhibit that reinforces programmatic contributions to the continual advancement of high-end computing, particularly recent work in support of stockpile stewardship.

Project requirements and Request to Participate forms are available on the Tri-Lab Website, http://www.lanl.gov/conferences/sc05/index.html. Forms must be received by Sept. 19. Submissions will be reviewed by the Tri-Lab team, and researchers will be notified of the status of their submissions by Oct. 3.

The theme for the 2005 Tri-Lab ASC exhibit is "Visualize the Difference."

Scientists, engineers, students, designers, managers, and executives from all areas of high-performance computing and networking report that they visit the exhibit year after year to learn about ASC's progress and innovations.

SC|05 will feature a number of highly anticipated events. The biannual TOP500 List of the world's fastest supercomputers will be announced for the second time this year. In addition, Microsoft Chairman and Chief Software Architect Bill Gates will deliver the conference keynote.

For more information, contact Jean Shuler at 3-1909 or jshuler@llnl.gov, Blaise Barney at 2-2578 or blaiseb@llnl.gov, or visit the SC|05 home page at http://sc05.supercomputing.org.

FUEL CELL

Continued from page 1

The company said it has been awarded a contract by the U.S. Army's Communications-Electronics Research, Development and Engineering Center to accelerate development of a more compact portable system to run at 25 watts.

"This new power source is being developed for commercial use as the UltraCell25™, and will be available in 2006 for professional, industrial and mobile computing applications," according to UltraCell's announcement.

UltraCell has an exclusive licensing agreement with LLNL for micro fuel cell technology using MEMS (microelectrical-mechanical systems) microreformer and micro fuel cell technology developed by Jeff Morse and his team in the Engineering Directorate's Center for Micro and Nano Technology. More information is available at the company's Website: www.ultracellpower.com.

BIODETECTION

Continued from page 1

exposed to biothreat agents such as anthrax and plague. The worst effects of most of these pathogens can be headed off if treatment begins before symptoms appear.

Mariella acknowledges, however, that in the long run, such "detect to treat" strategies don't go far enough. The ultimate goal, as outlined in a report earlier this year by the National Research Council (NRC), is a "detect to warn" capability that would collect and analyze a biological sample and launch protective measures within three to five minutes, "and preferably one minute," of release.

"There is growing consensus," the report says, "that such detection systems could be deployed by 2010."

Mariella, who was invited to participate in the NRC review because of his and LLNL's longtime involvement in biodetection technology, says reaching that goal will require a national commitment to a phased-in strategy for dealing with biological agents, as well as the resources to develop and deploy both existing and emerging technologies.

Simply compressing the amount of time required for current detectors to respond to the presence of a bioagent would be too expensive, Mariella says.

"One of the main questions is, how would you even know you're under attack, and how expensive would it be to determine that?" Mariella says. "Our human activities are a constant source of aerosolized biological material. It might be a farmer spraying something on his crops, or a passing garbage truck."

According to the NRC report, relatively simple and rapid "nonspecific" detection systems could be deployed within one to two years to help protect buildings and military installations. While these systems might not detect low levels of pathogens, and would run the risk of triggering false alarms, their fast reaction times could alert authorities to a possible attack.

"Less expensive technology would give you a warning that something bad might be happening," Mariella says. "It might miss a small attack, but there are good reasons for putting in these less specific, faster detectors. They can't tell the difference between bacteria, but they could tell you, for example, that the number of bacteria or spores in the air is much higher than you'd expect.

"It's like a smoke detector — when it goes off you don't run and call the fire department right away; first you check to see what set it off."

Mariella, director of the Center for Micro and Nanotechnology in the Lab's Engineering Directorate, helped produce the first drafts of the chapter in the NRC report on nucleic acid sequence (DNA)-based identification of bioagents, along with Mark Hollis from MIT's Lincoln Laboratory. After the drafts were submitted, all panelists contributed edits and suggestions for all the chapters in the final report.

Regarded as a leading expert in the field, Mariella helped launch the development of Livermore's Autonomous Pathogen Detection System (APDS) and Handheld Advanced Nucleic Acid Analyzer (HANAA) in the mid-1990s.

Both systems are now being developed for the commercial market. HANAA, the first truly portable battery-powered, DNA-based detector capable of detecting both bacterial and viral pathogens, is being marketed to firefighters, hazardous materials teams and other first responders by an East Coast company.

The mailbox-sized APDS continuously monitors for airborne pathogens and toxins. It uses two separate identification technologies, an immunoassay detector and a DNA amplification and detection system based on Livermore's rapid polymerase chain reaction (PCR) technology, to reduce the likelihood of "false positives" — incorrect results that could needlessly trigger an evacuation and arouse public concern.

APDS has been extensively field tested in airports and subway stations without a single false positive and it received a 2004 R&D 100 award from R&D Magazine as one of the year's top 100 technological advances. It was licensed to a company last year, and both APDS and HANAA are available for additional commercial licensing.

Mariella, who holds a B.S. degree in mathematics, chemistry and chemical engineering from Rice University and an A.M. and Ph.D. in physical chemistry from Harvard University, came to the Engineering Directorate in 1987 after 10 years at the Allied-Signal Corporate Research Center in Morristown, Va.

A specialist in bioinstrumentation, he was soon asked by members of the Laboratory's Nonproliferation, Arms Control and International Security Directorate (NAI) to apply his skills to developing defenses against bioweapons.

"Iraq had invaded Kuwait, and Desert Storm was going on," Mariella says. "Don Prosnitz (a division leader in NAI) made me aware that Iraq had bioweapons, that they had devoted considerable effort to making anthrax. He pointed out that this was an obvious weakness in our defense, and that we (Livermore) were in a position to do something about it."

Using their knowledge of genomics, biotechnology, microtechnology and engineering, Mariella and his colleagues went to work developing and field-testing portable DNA analyzers and bioagent detectors. A Laboratory Directed Research and Development director's initiative was launched in 1995, and by the fall of 1996, the technology had proven itself to the point where Mariella was able to prepare a successful white paper for the Department of Energy proposing lifecycle development of the APDS.

The NRC report says a relatively simple and rapid but "nonspecific" bioaerosol particle detection system, coupled with an automated, integrated system capable of identifying pathogenic microbes, could quickly detect a low-level biological attack with "very low false alarm rates." Such a system, the report says, could be developed over the next five years. "Ideally, both the bioaerosol detector and the rapid identifier would be operating continuously, making measurements every one to two minutes," the report says.

"We found that the only practical short-term solution was non-specific detection," Mariella says, "but we need to look at emerging technologies both for assay and identification. As that evolves, it would become more affordable to get a more sensitive system that would avoid the risk of having a passing garbage truck set off an alarm."

ITER

Continued from page 1

kind contribution of specific technical areas.

• Production and manufacturing of in-kind contribution should complete and submit the on-line survey form for each area of interest to them.

Information from the survey will assist the USIPO in near-term planning of solicitations for the open positions in the organization and for the necessary technical support staff and in longer-term planning for provision of materials for the in-kind contributions assigned to the United States as an ITER party.

This is the first request for expressions of interest and organizations that do not respond to this announcement will not be excluded from responding to future announcements. Survey information for this initial request must be submitted no later than Wednesday, Aug. 31.

For more information check the Web: http://www.iter-us.org/

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